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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* BIN LI, ALBERTO GINESI, and SONG ZHANG

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Appeal 2008-001740  
Application 10/046,639  
Technology Center 2100

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Decided:<sup>1</sup> June 18, 2009

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Before LEE E. BARRETT, LANCE LEONARD BARRY, and  
HOWARD B. BLANKENSHIP, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-24, which are all the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

The present invention relates to error-correcting codes (e.g., Reed-Solomon (RS) codes) that are useful for data transfer in relatively poor transmission environments (e.g., Digital Subscriber Line technology over phone lines, cable modems, digital satellite signals, and digital TV broadcasts). (*See generally* Spec. ¶¶ [05] - [10].)

Claim 1 is illustrative.

1. An iterative method for determining parameters for a forward error correction scheme for improving the quality of a data transmission, said method comprising the steps of:

(a) establishing a relationship between said parameters and a coding gain;

(b) initializing said coding gain to a minimum predetermined value;

(c) determining, based on said relationship between said parameters and said coding gain, an intermediate set of parameters for providing a preferred result for said coding gain;

(d) incrementing a value of said coding gain by a predetermined value and repeating said step (c) until said coding gain reaches a predefined maximum value, thereby determining a plurality of intermediate sets of parameters; and

(e) determining a preferred set of parameters from said plurality of intermediate sets of parameters, wherein said preferred set of parameters provides said forward error correction scheme with an optimal set of values for balancing a code length and an error rate of said data transmission.

The Examiner relies on the following reference as evidence of unpatentability.

Locke et al	US 6,598,188	Jul. 22, 2003
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Claims 1-24 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Locke.

*Section 102(e) rejection over Locke*

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

This appeal turns on whether Appellants have demonstrated that the Examiner erred in finding that Locke describes an iterative process that uses a “coding gain” as set forth in illustrative claim 1.

Initially, we note there appears to be no dispute with respect to the basic definition of “coding gain,” which is set forth in the Specification. The Examiner seems to acknowledge that the indication in the Specification is consistent with the recognized meaning in the art. (*See* Ans. 7-8.) “The term ‘coding gain’ refers to the difference in power that the non-error correcting system would require to transmit data of a specified bit error rate as compared to the power required by the error correcting system.” (Spec. ¶ [21].)

Locke uses the term “coding gain” at column 4, lines 25 through 28, apparently in reference to pseudo code at the top of column 5. The Examiner’s rejection of claim 1 (Ans. 3-4), however, refers to material in the

Abstract and in columns 27 and 28 of Locke. The rejection of the other independent claims on appeal (10, 15, 16, 20, and 21) relies on the same portion of Locke. (*See* Ans. 7.)

The Examiner's responsive arguments in the Answer suggest, however, that the "correcting power" described by Locke (e.g., cols. 27-28) is deemed to relate to the "coding gain" as claimed. The Examiner refers to pseudo code at the middle of column 7 of Locke as a program for "correcting power factor for each coding gain and branches out for example, if the minimum gap is greater than the required gap." (Ans. 8, ¶ 2.)

Instant claim 1 recites, in part, "(b) initializing said coding gain to a minimum predetermined value," which, by the way, we do not see in the pseudo code at column 5 of Locke that concerns "coding gain." The pseudo code at column 7 describes computing or selecting the correct "correcting power" by, initially, setting the "required gap" to the "min gap," a step which may be considered as initializing a quantity to a minimum predetermined value.

However, as pointed out by Appellants in the Reply Brief (at 3-4), Locke does not describe the "correcting power" as being consistent with, or relating to, the definition of "coding gain" that is accepted by both Appellants and the Examiner.

As set forth in the bottom half of the pseudo code at column 5 of Locke, "t is the effective correcting power of the proposed RS codeword," defined as "parity bytes per codeword/(loss\*2)." "Loss" is the "burst error coding loss," defined in steps just prior to the definition of effective correcting power. "Parity bytes" are, in essence, bytes added to a codeword for the purpose of correcting errors in codeword bytes. *See* Locke col. 1, ll.

53-59; col. 2, ll. 22-36. The “correcting power” in Locke is thus defined differently from the “coding gain” in the Specification, and distinct from the occurrence of the term “coding gain” elsewhere in the reference.

Moreover, Locke describes the “gap,” which is set to an initial minimum in the algorithm disclosed in column 7, not as “coding gain” but as mean squared error (MSE). *See* Locke col. 2, ll. 37-40; col. 4, ll. 16-19.

The Examiner’s position with respect to the “correcting power” described by Locke may be founded on the belief that a different coding gain would relate to each respective iteration of the “correcting power” steps shown in the pseudo code at column 7. For the purposes of this appeal, we can treat such a postulate as fact. However, the claims require specific operations on, and using, “coding gain” -- e.g., claim 1, “initializing said coding gain to a minimum predetermined value” -- that have not been shown on this record to be described by Locke.

We are thus persuaded by Appellants of error in the Examiner’s rejection, and cannot sustain the § 102(e) rejection of claims 1 through 24.

## CONCLUSION

The rejection of claims 1-24 under 35 U.S.C. § 102(e) as being anticipated by Locke is reversed.

## REVERSED

Appeal 2008-001740  
Application10/046,639

PEB

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